ATOMIC ENERGY Newsletter

THE FIRST AND ONLY ATOMIC NEWS SERVICE

ROBERT M. SHERMAN, EDITOR. PUBLISHED BI-WEEKLY BY ATOMIC ENERGY NEWS CO., 1000 SIXTH AVENUE, NEW YORK 18, N. Y.

May 4th, 1954.
Vol. 11...No.6

Dear Sir:

The economics of nuclear power are such that "it is sensible" to push the development of nuclear power in the United States, Henry D. Smyth, physicist member of the USAEC told a meeting in Chicago last fortnight. Dr. Smyth also observed that building a considerable number of large nuclear plants will make demands on special skills and special materials. These will fall largely in the general area of the chemical and metallurgical industries, he stated. (Condensation of this address: Page 4 this LETTER.)

Republic Steel Corporation has now taken its first step to enter the nuclear field, Charles M. White, Republic president, told a meeting of the New York Society of Security Analysts in New York last week. He told the group that Robert P. Petersen, now chief of the industrial and production reactors branch, of the division of reactor development, USAEC, will take up new duties at Republic this July 1st. Dr. Petersen will be concerned with the use of nuclear materials in the operation of steel plants, and in the production of steel. (Other BUSINESS news, page 2 this LETTER.)

A new technique for "tagging" gasoline with carbon-14 has now been developed by a research worker at the University of Chicago, using a process developed by Willard F. Libby, professor of chemistry in the University's Institute of Nuclear Studies. Previous methods of "tagging" gasoline for tracer studies had been cumbersome and lengthy. Research workers interested in the process may obtain a report on the work from the University. (Other PRODUCT & PROCESS news; page 3 this LETTER.)

Rix-Athabasca Uranium Mines (Canada) is "well satisfied" with the terms of production and price in the contract which it has received from Eldorado Mining & Refining, J. B. Aird, president, Rix-Athabasca, recently stated in the firm's annual report. He said that the revenue earned under the contract should prove sufficient to finance the company's mine development plans. (Other RAW MATERIAL news page 2 this LETTER.)

At Wayne University's recent Symposium on Nuclear Technology (April 29), R. B. Hahn spoke on Radiochemical Methods of Analysis; O. E. Gaebler, on The Determination of carbon-13 and nitrogen-15; L. M. Patrick, on Isotopes in Paint Technology; N. H. Horowitz, on a Scintillation Scanner Employing a Photographic Method of Recording; and D. Trivich on Selective Adsorption of Faces of Single Crystals. Speakers were members of the University faculty. (Other MEETING news, page 2 this LETTER.)

Continuing efforts of the U. S. Geological Survey directed toward uranium mineral explorations, have resulted in over 200,000 samples of radioactive material being analyzed by the GS, that Agency points out. In addition, samples have also been analysed for thorium. The various analytical methods employed are compiled in the Survey's Bulletin 1006, available from the Superintendent of Documents, Wash. 25, D. C., for $1. (Other PUBLICATION news, page 3 this LETTER.)

Subscription rates: United States, U.S. possessions, and Canada, $18.00 a year. Latin America, $20.00 a year. All other countries, $25.00 a year.
Copyright Atomic Energy News All rights reserved.

BUSINESS NEWS...in the nuclear field...

INVESTMENT COMPANY NOW ENTERS URANIUM ORE FIELD: The Atlas Corporation has now acquired a group of uranium ore claims and options in the Big Indian District of San Juan County, Utah, according to Floyd B. Odlum, president of Atlas. Atlas, an investment company dealing in "special situations", acquired the claims and options on behalf of the Wasatch Corp., an Atlas subsidiary, and of the San Diego Corp., and Airfleets, Inc. Atlas has a minority stock interest in the latter two firms. An agreement was also made under which certain of the claims and options owned by Wasatch, San Diego, and Airfleets would be combined with uranium properties of the Lisbon Uranium Corp., Salt Lake City. Lisbon owns a group of ten claims in the same area.

CONSTRUCTION CONTRACT BIDS RECEIVED: Bids (which were opened in the last fortnight) for the construction of a crushing and sampling plant at Moab, Utah, ranged from a low of $197,291 to a high of $293,916 with Davis & Butler Construction Co., Salt Lake City, Utah, being the apparent low bidder. The plant, which will be built for the USAEC, will be one of the largest uranium ore receiving stations in the Colorado Plateau. It will provide a market for acceptable uranium ores being produced in the Moab area which are not amenable to the process now used at the Monticello, Utah, plant. The plant, when completed, will be operated for the USAEC by the American Smelting & Refining Co., which now operates (for the USAEC) ore-buying stations at Monticello, Utah; Shiprock, N.M., and Edgemont, S.D.

RAW MATERIALS...radioactive mineral & ore development...

UNITED STATES: Denver:- Midwest Uranium Co., of this city, which owns some 170 uranium mining claims in an area southwest of Moab, Utah, between the Green and Colorado rivers, has leased out approximately 120 of these claims, with active work underway by the lessees. In addition, Midwest is starting operations of its own on some 25 claims at the junction of these rivers.....Santa Fe, N.M.:- Open pit mining operations are now underway at the property of Sierra Uranium Mining Co., in the Worden mountains, 25 miles south of Truthor. Martin A. Hougen, president of Sierra, predicted that more than 1 million tons of uranium ore, with high uranium content, will be taken from these claims.

CANADA:- At the Blind River property of Pronto Uranium Mines proven ore reserves have been increased to where they could now be placed at 2.5 million tons, with depth limits still open, according to F. Joubin, director of the firm. Metallurgical tests were now available to the company, Mr. Joubin said, so that a decision will be made soon on mining methods the company will use. He said that negotiations also were opened with Eldorado Mining & Refining for a contract.....Radiore Uranium Mines' property, which is under lease to Eldorado Mining & Refining, and which is now being actively explored by Eldorado, has shown "important tonnages of commercial grade ore", according to Radiore president J. J. Byrne. Other properties of Radiore have been disappointing, he stated: The Con property uranium occurrences were low; at the Ath property, drilling was found to be difficult and expensive; and the Stark Lake group did not stand up to test, so that the option on it was dropped.

MEETINGS...on nuclear subjects...

INTERNATIONAL NUCLEAR ENGINEERING CONGRESS TO BE HELD: Some 90 papers will be presented at the international nuclear engineering congress (of the American Institute of Chemical Engineers) to be held June 2-25, University of Michigan, Ann Arbor. Subjects to be covered include: Processing irradiated materials; research and educational reactors; applications of radioactive products; reactor technology; reactor construction materials; reactor fuel refining and preparation; and power reactors. A symposium will also be held on education in the nuclear field. Information on registration fees, etc., may be obtained from the A.I.Ch.E., 120 E. 41st St., New York, 17.

NUCLEAR REACTOR DEVELOPMENT TO BE DISCUSSED: A one day meeting May 24th is to be held by the Atomic Industrial Forum, Inc., in Washington, D.C., with talks by 10 representatives of United States firms active in the nuclear field. Details of the meeting are available from the Forum at 260 Madison Ave., New York 16.

NEW PRODUCTS, PROCESSES & INSTRUMENTS...for nuclear lab & plant...

FROM THE MANUFACTURERS: Model 218, linear amplifier, patterned after Oak Ridge National Laboratory models, includes improvements for added stability when used with proportional counters, scintillation counters, and other nuclear detection devices. A ten-turn helical potentiometer provides control of the pulse height discriminator at the high level output. More complete electrostatic shielding of amplifier and discriminator circuits is said to reduce interference from near-by equipment. Hermetically sealed transformers prevent high frequency transients when the rectifier switches from one half cycle to the other. A pre-amplifier, Model 219, has been designed for use with the Model 218 linear amplifier.--Atomic Instrument Co., Cambridge 39, Mass.

A new film badge service is said by the furnishing organization to make possible the evaluation of a wider range of ionizing radiations, including hard beta radiation and X-rays, and gamma rays from 30 kev to 5 mev. It is said that this is achieved by a special multiple filter system being used in an extremely wide range film packet. --Nuclear Instrument & Chemical Corp., Chicago 10, Ill.

New alpha particle detector, which manufacturer says can be used with most scalers and rate meters. This alpha "poppy" weighs 2-lb., 6-oz., and has a screen sensitive area of 150-sq. cm. By using scintillation techniques, which the "poppy" makes possible, it is expected that there will be less maintenance than is required with air-proportional alpha counters.--General Electric Co., Schenectady, N. Y.

NOTES: Radioactive Versene is now being made available by Abbott Laboratories, for research purposes. Versene, which is a chelating agent, is produced by F. C. Bersworth. The carbon-14 labeled Versene is physically and biologically stable.

The mineral montmorillonite has now been found to be effective as an ion exchanger, and as such to have potentialities as a decontaminant for radioactive contaminated water. The work on the subject was done at the research and development laboratory, Corps. of Engineers, Fort Belvoir, Va. Since montmorillonite clay is found in Arizona and Mississippi in virtually "unlimited" quantities, it may be of broad use, although it was found to be less efficient than other ion exchangers in the Belvoir research.

Lead has been found to be 10 to 100 times as effective as equal weights of iron, and even more effective than other materials, for shielding in the X-ray region, Marvin Fox, Chairman, Reactor Department, Brookhaven National Laboratories told a meeting of the Lead Industries Association last fortnight in Chicago. He pointed out that as energies increase to about 3 MEV, there is very little distinction between lead and iron. He noted that although the use of lead is more economical in the X-ray region, than at the higher energy levels, lead always has the advantage of greater density and hence is preferable where there are space limitations, such as in nuclear powered aircraft and submarines. According to Dr. Fox, one of the major uses of lead in nuclear work (and one that promises to be still greater in the future) is in the manufacture of shipping and handling containers for radioisotopes and in laboratories handling these materials.

NEW BOOKS & OTHER PUBLICATIONS...in the nuclear field...

Selling to the U.S. Atomic Energy Commission; Directory of Purchasing Offices, List of Products Purchased. Information helpful to those who want to do business with the USAEC or its contractors. (Order as catalog no. Y3. At 7:2 Se 4/2)--Superintendent of Documents, Wash. 25, D. C. (25¢)

Nuclear Reactors Available. A four page illustrated catalog describes three basic types of nuclear reactors this firm is now offering for academic, industrial, and medicinal research; they are not designed for generation of electric power. --North American Aviation, Downey, Calif.

NOTES: The fifth issue of the "Nucleus", internal-external house organ of Nuclear Instrument & Chemical Corp., Chicago 10, Ill., is now available on request from that firm.

Information concerning the design, construction and operation of a shockproof boron trifluoride proportional counter (28 mimeographed pages) may be obtained on request from the USAEC's Pittsburgh Area Office, P.O.B. ox 1105, Pittsburgh, Pa.

INDUSTRIAL APPLICATIONS OF ATOMIC ENERGY: Condensation of remarks by Henry D. Smyth, Member, USAEC, before Annual Conference of Business Economists, University of Chicago, April 23rd, 1954.

Today I shall emphasize the economic aspects of nuclear power.

There is no doubt about our technical ability to make electric power from the fission of uranium; we are already doing so in three nuclear reactors, each radically different from the other.

The question is: "Can power from uranium be made cheaply enough to compete with that from other more conventional fuels?"

If we are to achieve this goal, we must continue to find uranium ore that can be mined for about the same price that we now pay. In terms of recent rates of discovery, this seems a reasonable assumption for many years to come, but it is an assumption. We must also find some way of using the fission energy in thorium, and in uranium-238, the common isotope of natural uranium. Further, the chemical and metallurgical processes to reprocess the fuel elements of reactors must be simplified, and costs reduced.

An important factor in the present high cost of nuclear power is the high investment required to build nuclear reactors. Amortization of this investment also contributes to costs. The present downward trend should continue.

Finally, we must learn to build nuclear reactors that are so safe they can be put on relatively small plots of land conveniently near large centers of population, because the source of power should be reasonably near the user. I think our reactors are already safe.

Our definition of success--our objective (in the nuclear power program)--is to bring the cost of generating power from nuclear fuel down to 8 mills or less per kilowatt hour.

To become widely competitive with efficient coal-burning plants in the United States, nuclear power costs would have to get down to the range of 4 to 7 mills per kilowatt hour. My general over-all assumption, then, will be that technical progress within the next twenty years will bring nuclear power costs down to somewhere around 4 to 8 mills per kilowatt hour.

Let us assume that our domestic technical program will be pushed and will be successful. What will be the impact on our economy between now and 1975?

I will examine two specific cases. Both assume that a development program including construction of several large nuclear power plants by the mid-1960's will lead to the building of a growing number of nuclear plants generating power at competitive costs. The two illustrative cases differ in their additional assumptions.

Case I assumes nuclear power costs at 7 mills per kilowatt hour in 1963 falling to 4 mills by 1975. It further assumes that as power plants are built in different parts of the country, giving power at different costs, one-half will be nuclear if the costs are the same.

Case II assumes 7 mills per kilowatt hour in 1965, falling to 5 mills in 1975. It further assumes that nuclear power plants will be built only if they have an advantage of one mill per kilowatt hour over conventional plants.

In Case I, by 1975 the nuclear power component of the electric generating industry would have an installed capacity of 21 million kilowatts. On an 80% plant factor, such a capacity might generate 147 billion kilowatt hours out of 1166 billion to be generated from all steam plants in 1975. The share of nuclear power in the total projected electric generation of 1400 billion kilowatt-hours in that year would thus be about 10%.

In Case II, with its less optimistic assumptions, the nuclear power share is, of course, smaller. About 5 million kilowatts of nuclear capacity would be in operation in 1975, generating about 35 billion kilowatt hours. The share of nuclear power in total U. S. electrical output would be about 2%.

Today, no one can predict whether the nuclear power industry will in 1975 be producing 10%, 2%, or some other share of the U.S. electrical output. Nevertheless, these illustrative estimates indicate the scale that might be achieved if development is pressed and proves successful.

ATOMIC PATENT DIGEST...recent grants & other news in the nuclear field...

LICENSES AVAILABLE: A new group of 18 U.S. (Government-owned) patents, developed in the course of nuclear research, is now available for licensing on a royalty-free (non-exclusive) basis. Patent copies may be obtained from U.S. Patent Office, Wash. 25, D.C., at 25¢ per patent (35¢ for expedited service). Applicants for licenses should apply to Patent Branch, USAEC, Wash. 25, D.C. This group comprises: (1) Ion source for particle accelerator; no. 2,668,260. (2) Voltage regulator; no. 2,668,272. (3) Continuous recording high speed frame camera; no. 2,668,473. (4) Sylphon sealed pump for corrosive gases; no. 2,668,656. (5) Apparatus and distillation process for manufacture and recovery of high vacuum oils; no. 2,668,794. (6) Electronic relay system; no. 2,668,934. (7) & (8) Electromagnetic fluid pump; no. 2,669,183, and 2,669,931. (9) Production of fluorinated diketones; no. 2,670,353. (10) Improved amplifier system; no. 2,670,408. (11) Accelerator target holder; no. 2,670,440. (12) Liquid medium pressure regulator; no. 2,672,154. (13) Reaction and separation vessel; no. 2,672,404. (14) Simple electronic timing device; no. 2,672,556. (15) Process for preparing uranium tetrafluoride; no. 2,674,518. (16) Improved multipactor tube oscillator; no. 2,674,694. (17) Beam defining apparatus; no. 2,674,698. (18) Readily transportable shielded container for radioactive material; no. 2,675,487.

NEW GRANTS MADE: Method and apparatus for measuring the thickness of a material. Comprises (in part) subjecting the material to radiation; scanning the surface of the material with a detector; continuously measuring the energy received by the detector from the material during this scanning; and translating intelligence received. U. S. Pat. No. 2,675,482 issued Apr. 13, 1954; assigned to Isotope Products, Ltd., Oakville, Ont., Canada. (Inventor: D. C. Brunton.)

Method and apparatus for measuring mass per unit area of sheet material. Comprises (in part) a source of radiation energy; an ionization tube held at a predetermined distance from the source; and accessory components. U. S. Pat. No. 2,675,483 issued Apr. 13, 1954; assigned to Isotope Products, Ltd., Canada. (Inventors: G. L. Leighton, R. F. Maskell, and N. Z. Alcock.)

Radiation detection apparatus comprising (in part) an ionization tube, and novel electronic circuitry embracing this tube. U. S. Pat. No. 2,675,484 issued Apr. 13, 1954; assigned to Hartford National Bank and Trust Co., as trustee. (Inventor: Gerard Hepp, Eindhoven, Netherlands.)

Lead pellet absorptive shield for betatrons. Comprises (in part) apparatus including a variable magnetic field and a shield in this field, the shield comprising pellets of nonmagnetic X-ray absorptive metal; electrical insulation separates these pellets. U. S. Pat. No. 2,675,485 issued Apr. 13, 1954; assigned to Allis Chalmers Mfg. Co., Milwaukee, Wisc. (Inventor: D. T. Scag.)

Beam therapy collimating unit. Comprises (in part) a collimator for defining a beam of radiation with a lower shell telescoping with an upper shell; means for defining the beam in the lower shell; and means for telescoping the upper and lower shells. U. S. Pat. No. 2,675,486 issued Apr. 13, 1954: assigned to Atomic Energy of Canada, Ltd., Ont., Canada. (Inventors: D. T. Green and C. S. McColm.)

Improved phase meter for measuring the variation of phase angle from 120-deg. Comprises (in part) in combination with a pair of conductors having voltages impressed on them, of a phase to be determined; a pair of resistors having equal resistances connected in series between these conductors, and being grounded at their common junction; a pair of equal series - connected resistances and a center terminal at the common juncture of these resistances; a grounding resistor having a center tap and connected between one of these conductors and ground; first voltage measuring means connected between the conductors; second voltage measuring means connected between the center terminal of the voltage divider and the center tap of the grounding resistor whereby said voltages measured are indicative of the variation of the phase angle from 120-deg. U. S. Pat. No. 2,676,299 issued Apr. 20, 1954; assigned to United States of America (USAEC). (Inventors: M. A. Leavitt and B. H. Smith.)

Sincerely,

The Staff,
ATOMIC ENERGY NEWSLETTER

May 4th, 1954.